

## **4.6 Manufacturing Verification and Test Assurance Processes**

### **4.6.1 Assembly, Integration, and Test**

The responsibility for assembly and integration lies with the Assembly, Integration, and Test (AIT) IPT. This team's overall responsibility includes assistance in:

- Collaborative design engineering for manufacturability as well as testability
- Development and execution of vehicle assembly planning and procedures
- Functional test and evaluation of the flight vehicle systems
- Configuration of the vehicle as an atmospheric test article and its modification into a space-flight configuration

The Boeing Aircraft and Missiles (A&M) and the Reusable Space Systems (RSS) business units are assisting in the fabrication of parts, flight test equipment, and support items required by the program. These business units provide the staffing levels, utilizing "best" personnel assets, to assure assembly, integration, and test success. Each business units' respective staff operate under one individual who oversees both units for onsite program management and reports directly to the AIT IPT lead. The "Best of Boeing" practices, separate from the mainstream facility environment, are being utilized.

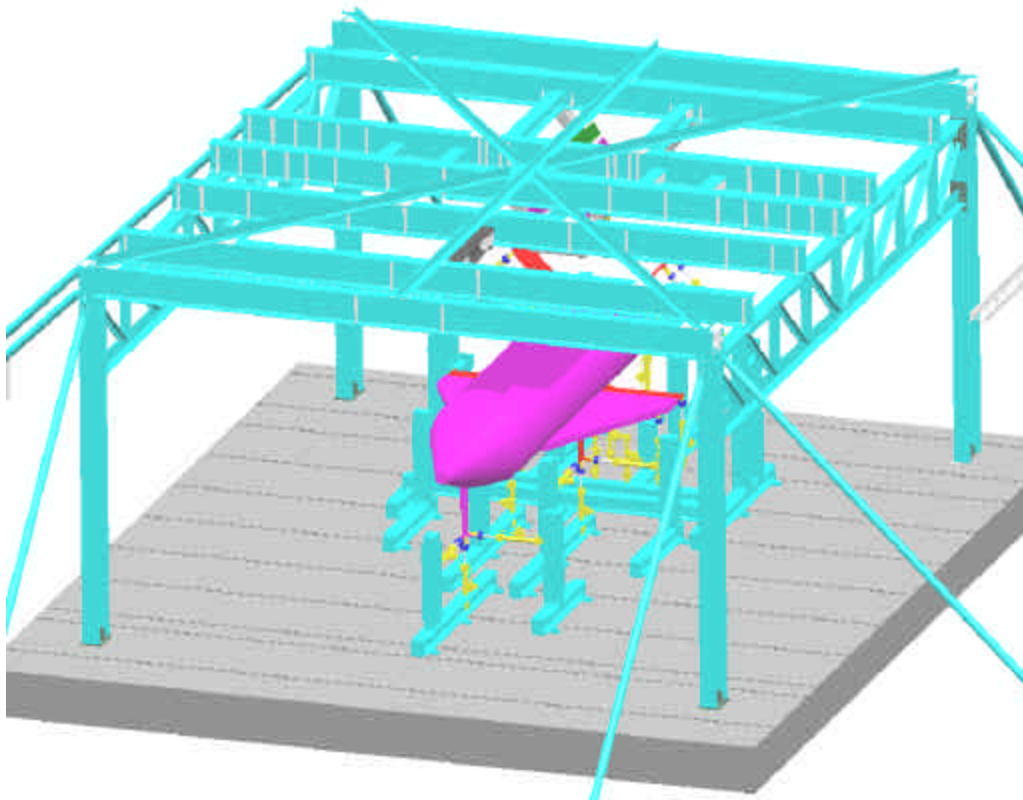
The AIT process controls employed on X-37 are either currently in use on the Space Shuttle or International Space Station or are unique adaptations of previously approved processes. AIT variability reduction activities, based on collaborative engineering and assembly simulations, are planned to reduce the variability issues between as-designed components. Digital capture of the as-built parts as they become available will be incorporated to further reduce variability risks.

In the manufacturing areas, quality engineers currently supporting both Space Shuttle hardware and International Space Station development will be utilized to review all build and test procedures. Dedicated quality inspectors are planned to be on the factory floors to support daily build and test operations.

### **4.6.2 Major Manufacturing, Assembly, and Integration Locations**

The X-37 major airframe (fuselage) will be manufactured at the Boeing A&M facility located in St Louis, Missouri. Upon completion, the fuselage will be shipped to Palmdale, California. The fuselage and major structural components will be assembled at the High Desert Assembly and Integration Test Facility (HDAIT) Building 145. Following initial assembly, the vehicle will be subjected to static proof loading as depicted in figure 4.14.

Figure 4.14 X-37 Static Proof Loading



The X-37 final assembly and integration of subsystems will be done jointly utilizing the assets of the HDIAT and the Reusable Space Systems Assembly, Integration, and Test Facility. Both of these facilities are collocated at the Air Force Plant 42, Site 1, in Palmdale, California.

#### 4.6.3 Program Plans

Specific program level plans have been drafted in support of the AIT effort. These include:

- Quality Assurance Plan
- Safety Plan
- Contamination Plan
- Integrated Vehicle Test Plan
- Manufacturing Test Plan
- Transportation Plan
- Configuration Control Plan
- GSE/STE
- Material Control Plan
- Facilities Utilization Plan